

DISCUSSION OF THE AMENDMENT

Claims 1-14 are active in the present application. Claims 15-17 are cancelled claims. Claim 1 has been amended to state that the heat exchange unit has a laminated structure that includes first, second and third heat exchangers. Support for the amendment to Claim 1 is found in the original claims and in the Figures.

No new matter is believed to have been added by this amendment.

### REMARKS

Applicants thank Examiner Echelmeyer for discussing the patentability of the claimed invention in view of the inclusion of a heat exchange unit having a laminated structure that includes first, second and third heat exchangers. Independent Claim 1 now requires that the fuel cell has a heat exchange unit having a laminated structure that includes first, second and third heat exchangers.

Applicants submit that the prior art of record does not disclose or suggest a fuel cell having a heat exchange unit with first, second and third heat exchangers arranged in a laminated structure. For at least this reason, the present claims should be allowed.

The heat exchange unit of the claimed fuel cell is able to accomplish both dehumidification of an incoming gas stream and harvesting energy from an outgoing off-gas stream (e.g., a combustion gas stream). Importantly, in the presently claimed invention, such functionality is carried out by the same heat exchange unit having a laminated structure with first, second and third heat exchangers. Applicants submit that the prior art relied on by the Office, Dickman and Okamoto (U.S. 6,045,933) do not disclose or suggest any fuel cell having a heat exchange unit with a laminated structure including first, second and third heat exchangers that is able to concurrently carry out dehumidification and heat harvesting. The Office relied on Okamoto as evidence that the prior art discloses dehumidification of an incoming fuel gas stream. Applicants draw the Office's attention to the disclosure at column 8, lines 37-52 of Okamoto:

FIG. 9 shows the eighth embodiment of the invention which is equipped with a humidity conditioning device 160 which differs from the humidity conditioning device 152 shown in FIG. 8. The humidity conditioning device 160 comprises a dehumidifying means 162 for removing moisture from the fuel gas when the moisture content of the fuel gas is excessive for the fuel cell stack 32, and a humidifying means 164 for adding moisture to the fuel gas when moisture in the fuel cell stack 32 is insufficient. The dehumidifying means 162 is provided as a coolant medium circuit for conducting heat exchange together

with the fuel gas, whereas the humidifying means 164, similar to the humidity conditioning 152, makes use of the cooling water which has been used for cooling the fuel cell stack 32, and can also perform humidifying by an injector, membrane humidifying device, bubbler or the like.

The above-quoted disclosure of Okamoto is important for several reasons. (1) The above-quoted disclosure distinguishes a dehumidification means from a humidity conditioning device disclosed in Okamoto. The humidity conditioning device, described at column 8, lines 1-36, is a means by which the humidity of the incoming gas stream may be increased, by heating the incoming gas stream or by adding water to it. Okamoto discloses that the coolant medium that may be used for capturing heat from the Okamoto fuel cell may be used in the humidity conditioning device but does not disclose the use of this coolant medium in the dehumidifying means. In fact, Okamoto describes the dehumidifying means as having its own coolant medium circuit. It further states that when a fuel cell has both a dehumidifying means and a humidifying means the humidifying means may use “the cooling water which has been used for cooling the fuel cell stack” but nowhere discloses or suggests that this coolant medium may be used for dehumidification.

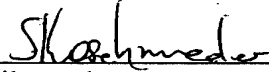
At best, Okamoto discloses dehumidifying an incoming gas stream by using a separate coolant system, e.g., a coolant system wherein the heat exchange units are separate and not laminated.

In contrast, the fuel cell of the presently claimed invention requires the inclusion of a heat exchange unit having a laminated structure with first, second and third heat exchangers. The prior art of record nowhere suggests or discloses this feature of the presently claimed invention.

For the reasons discussed above, Applicants submit that all now-pending claims are in condition for allowance. Applicants request the mailing of a Notice of Allowance acknowledging the patentability of the present claimed subject matter.

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